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| 10/521,173  | 08/30/2005  | Kikuo Okuyama        | 0074/048001         | 2931             |
| 22893 7590 10/28/2008<br>SMITH PATENT OFFICE<br>1901 PENNSYLVANIA AVENUE N W<br>SUITE 901<br>WASHINGTON, DC 20006 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| BAINBRIDGE, ANDREW PHILIP   |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/521,173

**Applicant(s)**

OKUYAMA ET AL.

**Examiner**

ANDREW P. BAINBRIDGE

**Art Unit**

3754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 8/7/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. **Claim 5 is objected to** because of the following informalities: the word "deice" is clearly intended to be spelled "device". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1, 5, 8 and 10 are rejected under 35 U.S.C. 103(a)** as being unpatentable over US 6,429,426 (Doring) in view of JP 2,951,477 (Mizushima).
5. Doring in figures 1-3c discloses an ionization chamber 1-2, 4 with an inlet duct 8 that introduces gas and particles to the chamber and an outlet chamber 9 that exhausts processed ionized gases, with an x-ray emitting device 11-15, 18 that is close to the inlet duct (see figure 3a), with an ion admission grid 3 located near the outlet of the chamber 1-2, 4. Doring lacks teaching using an x-ray that specifically is between the

range of 0.13 nm to 2 nm. Mizushima teaches the use of Beryllium as an X-ray source to emit waves between 2 and 20 angstroms (see abstract). The patent Examiner takes official notice that 1 nm is equal to 10 angstroms, which means that the 2 to 20 angstroms wavelength of Beryllium overlaps the claimed range of 0.13 nm to 2 nm. It would be obvious to one of ordinary skill in the art to adapt the Beryllium X-ray emissions of Mizushima to the Doring device because the Beryllium soft X-rays do not penetrate far past simple air or gas, and so make the emissions safe to have close to a variety of sensitive locations, including near human beings.

6. **Claims 2 and 9 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Doring in view of Mizushima as applied in claims 1 and 8 respectively, and further in view of US 4,870,284 (Hashimoto et al.).

7. Doring in view of Mizushima as applied in claims 1 and 8 respectively has all of the elements of claims 2 and 9 except for a powered switch that controls the amount of and can stop the x-ray emissions. Hashimoto in figures 1-5 teaches ion creating device with a powered switch 20 that toggles 7 between a low voltage DC current and a high voltage current (col. 3, lines 30-45, col. 4, lines 1-15). It would be obvious to one of ordinary skill in the art to adapt the toggled switch of Hashimoto to the Doring-Mizushima combination because it is at a minimum an energy saving feature and more seriously a safety feature to be able to reduce or turn off the ionization process when desired.

8. **Claim 3 is rejected under 35 U.S.C. 103(a)** as being unpatentable over JP 2001-070743 (Takao) in view of Mizushima.

9. Takao in figures 1-4 discloses a chamber 11 with an electric field generating section with two electrode plates 12-13 arranged on opposite surfaces facing one another with an x-ray generating device 17 that creates a radiated and non-radiated area of the chamber 11, with the inlet 16 introducing gas to the chamber 11 with two outlets 14-15. Takao lacks teaching that the x-ray emission's main wavelength is between 0.13 nm and 2 nm, and that the outlet duct faces the inlet duct. Mizushima teaches the use of Beryllium as an X-ray source to emit waves between 2 and 20 angstroms (see abstract). The patent Examiner takes official notice that 1 nm is equal to 10 angstroms, which means that the 2 to 20 angstroms wavelength of Beryllium overlaps the claimed range of 0.13 nm to 2 nm. It would be obvious to one of ordinary skill in the art to adapt the Beryllium X-ray emissions of Mizushima to the Takao device because the Beryllium soft X-rays do not penetrate far past simple air or gas, and so make the emissions safe to have close to a variety of sensitive locations, including near human beings.

Although Takao does not explicitly teach the potential of orienting the outlet to face the inlet, it is a matter of an obvious design choice. It would have been an obvious matter of design choice to a person of ordinary skill in the art to orient the inlet to face the outlet because Applicant has not disclosed that having the inlet and outlet actually face one another provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to equally well with the outlet and inlet on the same but at different ends of the same chamber because the purpose of the design is to ensure that gas and

aerosols enter the chamber, become irradiated, and then are manipulated to control which outlet they exit. Therefore, it would have been an obvious matter of design choice to modify Takao to obtain the invention as specified in claim 3.

10. **Claims 4, 6-7 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Takao in view of Mizushima as applied in claim 3, and further in view of Hashimoto.

11. Takao in view of Mizushima as applied in claim 3 has all of the elements of claims 4, and 6-7 except for a powered switch that controls if and how much X-rays are emitted, the source being a direct current high voltage power source. Hashimoto in figures 1-5 teaches ion creating device with a powered switch 20 that toggles 7 between a low voltage DC current and a high voltage current (col. 3, lines 30-45, col. 4, lines 1-15). It would be obvious to one of ordinary skill in the art to adapt the toggled switch of Hashimoto to the Takao-Mizushima combination because it is at a minimum an energy saving feature and more seriously a safety feature to be able to reduce or turn off the ionization process when desired.

#### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW P. BAINBRIDGE whose telephone number is (571)270-3767. The examiner can normally be reached on Monday to Thursday, 9:30 AM to 8:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on 571-272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. P. B./  
Examiner, Art Unit 3754

/Kevin P. Shaver/  
Supervisory Patent Examiner, Art  
Unit 3754